METHOD OF TEST FOR DETERMINING THE AMOUNT OF CHERT, IRON OXIDE, AND COAL IN COARSE AGGREGATE

(General Rewrite)

SCOPE

This test method is for determining the amount of chert, iron oxide and coal in coarse aggregate. For this method, chert is identified as (1) an extremely dense sedimentary rock consisting dominantly of silica and being flint-like in appearance. It is considered sound and is referred to as brown chert. (2) Chert commonly referred to as white chert may range in color from white to dark gray. This chert is softer, less dense than the brown chert and frequently has a chalk-like appearance. This type of chert is considered to be unsound.

PROCEDURE

A. Apparatus
   1. Sieves - a 3/8 in. (9.5 mm) and No. 4 (4.75 mm) sieve having wire cloth conforming to AASHTO M-92.
   2. Oven or hot plate
   3. Balance - A balance having a capacity of at least 5000 grams, accurate to 0.5 gram

B. Sample Size
   1. Reduce the field sample by either quartering or splitting as described in Materials I.M. 336 to the size that will conform to Materials I.M. 301 sieve analysis of applicable material.

C. Sample Preparation
   1. Sieve the sample on the No. 4 (4.75 mm) sieve and discard the material passing that sieve. The portion of aggregate retained must be at least 2,500 grams.

   2. As an alternate method, build up a sample of at least 2500 grams from the retained fractions of a sieve analysis test, beginning with the fraction of material retained on the No. 4 (4.75 mm) sieve.

   3.

      Note 1: When the sample represents material intended for use in PC Concrete for bridge deck repairs, surfacing and overlays, the total sample retained on the No. 4 (4.75mm) sieve is used.

      Note 2: When the sample represents material intended for other types of PC Concrete construction, the sample must be sieved on the 3/8 in. (9.5 mm) sieve. The material passing the 3/8 in. sieve (9.5 mm) is discarded and the amount of chert is determined on the plus 3/8 in. (9.5 mm) sieve size portion of the sample.

D. Test Procedure

1. Wash and dry the sample to a constant mass (weight) in an oven at a temperature of 230 ± 9°F (110 ± 5°C) or on a hot plate at low heat setting.

2. Allow the sample to cool and weigh to the nearest 0.5 gram.

3. Spread the sample out on a flat surface. Visually examine the aggregate particles and remove the white and brown chert, iron oxide or coal.

NOTE 1: The total sample [plus No. 4 (4.75 mm) sieve] is used for determining the amount of chert when the sample represents material intended for use in PC Concrete for bridge deck repairs, surfacing and overlays.

NOTE 2: Samples [plus No. 4 (4.75 mm) sieve] presenting material intended for other types of PC Concrete construction must be sieved on the 3/8 in. (9.5 mm) sieve. The minus 3/8 in. (9.5 mm) sieve size is discarded and the amount of chert is determined on the plus 3/8 in. (9.5 mm) sieve size portion of the sample.

4. Weigh the total amount of each type of chert (white and brown), iron oxide or coal to the nearest 0.5 gram.

E. Calculations

1. Calculate the percent of each type of chert (white and brown), iron oxide or coal based upon the total mass (weight) of the sample [plus No. 4 (4.75 mm)] after washing and drying.

PERCENT CHERT, IRON OXIDE, OR COAL =

$$\frac{\text{Dry Mass (Wt.) of Chert (etc.)}}{\text{Dry Mass (Wt.) of Original}} \times 100$$